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The importance and benefits of defining full-time equivalence in the field of acute care surgery

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ABSTRACT

Acute care surgery (ACS) encompasses five major pillars - trauma, surgical critical care, emergency general surgery, elective general surgery and surgical rescue. The specialty continues to evolve and due to high-acuity, high-volume and around-the-clock care, the workload can be significant leading to workforce challenges such as rightsizing of staff, work-life imbalance, surgeon burnout and more. To address these challenges and ensure a stable workforce, ACS as a specialty must be deliberate and thoughtful about how it manages workload and workforce going forward. In this article, we address the importance, benefits and challenges of defining full-time equivalence for ACS as a method to establish a stable ACS workforce for the future.

Acute care surgery (ACS) as a specialty continues to evolve, particularly at academic medical centers. Acute care surgeons are general surgeons with additional board certification in surgical critical care that practice trauma, surgical critical care, emergency and elective general surgery. More recently described, the 'fifth pillar' of ACS includes surgical rescue, or the efficient and precise diagnosis and surgical management of complications to prevent mortality.[1]

ACS is unique compared with other surgical subspecialties that focus on elective practices. Contrary to elective practice, ACS focuses predominantly on emergent and urgent conditions, handling the full spectrum of severity of surgical and medical conditions. ACS surgeons care for some of the sickest patients in the hospital and, in many centers, 24/7 inhouse call is required.[2] The burden of disease is high with approximately 5.9 million patients admitted to the hospital in 2014 which represented 20% of all hospitalizations. ACS patients accounted for 25% of total US inpatient costs or $85.8 billion.[3]

Due to the high-acuity and high-volume nature of the care provided around-the-clock, the workload can be significant. This often leads to challenges to rightsizing the number of surgeons and advanced practice provider staff to support ACS services. Malalignment of service needs and providers can lead to higher levels of stress and burnout. In a survey of academic acute care surgeons, 57% of respondents were not happy with their current work-life balance.[4] Survey data not specific to ACS have shown that characteristics common to ACS practices are associated with higher rates of burnout, such as evening coverage and emergent cases.[5–7] When burnout rates rise, quality of care may be compromised.[5] Burnout and depression in surgeons have been shown to be independent predictors of major medical errors, even when controlling for other personal and professional factors.[8]

Workforce challenges create a threat to recruitment and retention of ACS surgeons. Trainees who might be considering a career in ACS observe ACS faculty carry heavy workloads and cover night/weekend coverage. They also observe this heavy workload juxtaposed against fields within surgery where lifestyle may be more balanced leading many to associate ACS with a worse lifestyle. These unique characteristics make it a challenge to establish, maintain and grow an ACS workforce.

To address these challenges and ensure a stable workforce, ACS as a specialty must be more deliberate and thoughtful about how it manages workload and workforce going forward. The specialty must be more competitive and flexible to recruit and retain ACS surgeons. In this article, we address the importance, benefits and challenges of defining full-time equivalence for ACS as a method to establish a stable ACS workforce for the future.

WHY SHOULD HOSPITALS AND SCHOOLS OF MEDICINE INVEST IN A STRONG ACS WORKFORCE?

Implementation of the dedicated ACS model in most hospitals has been shown to benefit the institution, surgeons from other specialties and the patients it serves. In a tertiary referral, non-trauma hospital, the implementation of an ACS team resulted in fewer overall complications (21% vs 12%, $p<0.0001$), decreased length of stay (5.7 days vs 6.5 days, $p=0.0016$) and overall reduction of cost by roughly 25% as compared with prior.[9] Mortality is improved for emergency general surgery patients using an ACS model.[10–14] In a multi-institutional study, hospitals with a dedicated ACS service experienced a 31% reduction in mortality for patients requiring emergency surgery as compared with those without a dedicated service.[15]

Furthermore, ACS surgeons play a critical role in supporting trauma centers. In fact, to be verified by the American College of Surgeons, Level 1 and 2 trauma centers must have continuously available surgical coverage and ACS surgeons.[2] ACS surgeons may also improve the timeliness of care for hospitalized patients with new, acute problems or complications. This surgical rescue of hospitalized patients from potential demise requires timely identification of complications and often operative intervention.[3 16] The addition of an ACS program

results in decreased time-to-operating room in these instances.[17] Taken together, there is a reason for hospitals to invest in ACS and in supporting the ACS workforce.

IS THERE AN URGENCY TO STABILIZE THE ACS WORKFORCE?

Healthcare is experiencing rising staffing costs driven by decreasing workforce numbers. In a pre-COVID Association of American Medical Colleges (AAMC) report, a trend towards early retirement was already being seen among surgeons. Projections indicate a surgeon shortage of 17 000–28 000 surgeons by 2033.[18] This has only worsened since the COVID-19 pandemic.

The nature of ACS work puts the specialty at a disadvantage against other fields. Shanafelt *et al* noted that nearly 40% of American surgeons met criteria for burnout and that the OR for burnout was 1.56 for the specialty of trauma surgery.[8] Furthermore, the number of nights on call per week and total hours worked per week were associated with increased odds of burnout. In another study, Hughes *et al* noted that among acute care surgeons, the greatest detractors from work enjoyment were burnout/fatigue, (35.4%), bureaucracy/paperwork/insurance (26.5%) and coworkers/work environment (18.2%).[19] Given a shrinking healthcare workforce and potentially growing dissatisfaction with ACS as a practice, workforce stabilization is needed to reduce burnout, increase retention in the field, and ensure ACS patients get the care they need.

ASSESSING THE WORKLOAD FOR ACS SURGEONS

There are limited data on how much ACS surgeons work. In one survey of mostly academic medical centers, it was reported that 74% of ACS surgeons worked more than 60 hours per week.[1] In the same survey, 15% of surveyed surgeons worked 81 or more hours per week. In contrast, on average, colorectal surgeons work 57 hours a week, vascular surgeons 61 hours, and orthopedic surgeons 52 hours per week.[20] In contrast, in the European Union, the European Working Time Directive mandates that no physician works more than 48 hours per week.[18] The timing of work for ACS surgeons is also different. Almost a half of the ACS surgeon's work is on nights and weekends.

During a panel session at the 2022 American Association for the Surgery of Trauma (AAST) annual meeting, a diverse group of ACS surgeons was surveyed. Some striking findings were uncovered. First, 92% of respondents thought that ACS surgeons work either 'somewhat more' or 'a lot harder' than other surgeons, and 96% thought that number of hours worked affects workforce stability. When asked how many hours per week an ACS surgeon should work ranging from 60 hours to 'hours do not matter', the most common response was that the average number of hours per week of total work should not exceed 60 hours (75% of respondents). However, during the same AAST discussion, when only division chiefs and chairs were asked to respond, only 39% agreed with that assessment. Further, 8% of the leadership cohort reported that 90 hours per week was appropriate and 16% reported that hours do not matter.

These findings identified a discrepancy within the specialty, particularly between ACS leadership and the workforce. It also established an imperative for ACS leadership to be deliberate about its approach towards workforce staffing. If the job is not defined by ACS surgeons, it will be defined for them.

BALANCING PROFICIENCY, MASTERY AND WORKLOAD

The overarching goal of the profession is to support safe, high-quality care for ACS patients. There are concerns that limiting workload to strengthen numbers in the workforce will decrease the competency and therefore the quality of care provided by ACS surgeons. Unfortunately, proficiency and mastery have never been tracked or measured making these important considerations difficult to quantify.

However, although it is difficult to quantify the number of hours it takes to become a proficient surgeon, there is an analogy in surgical training. Since the advent of work hour restrictions within residency programs, multiple studies have sought to analyze whether this limitation degrades resident surgical competency. Though initial evidence suggested a small decrease in case log numbers after the implementation of resident work hour restrictions, the evolution of residency education has adapted to create surgeons who are competent.[21–23] This is not the entire story as competency in passing board examinations does not equate to confidence nor does it guarantee a surgeon is on the path to mastery. But the analogy to training does suggest that ACS may be able to adapt and ensure achievement of mastery. For example, by concentrating exposure to particular cases or providing new faculty with more intensive mentorship, competence and confidence is achievable.

DOES DECREASED WORKLOAD LEAD TO IMPROVED SURGEON SATISFACTION?

Satisfaction with the ACS clinical environment can be achieved by modifications to the practice. A cross-sectional analysis assessed lifestyle satisfaction among surgeons performing emergency surgery both before and after the implementation of an ACS team. In that study, 84% of respondents stated an ACS model allowed their work schedules to be more predictable and improved their quality of life,[5] 79% stated it allowed them to spend more time with families and 90% thought it was a positive change that allowed them to focus on other areas of interest.[5] To further this point, the transition from a 24-hour call model to 12-hour shifts improved all factors relating to burnout, including workload, emotional exhaustion, and fairness.[6]

Autonomy and flexibility have been shown to be associated with quality of life.[24 25] The ACS model allows for different scheduling models that can optimize individual and hospital priorities, putting it at a potential advantage against other specialties. This means that the team-based model of ACS permits a predictable number of clinical weeks per year, as well as hours per week of total work in a typical ACS model.

KEY CONSIDERATIONS

There are several key considerations when initiating a national dialogue on an ACS workforce. For one, the ACS model varies widely by hospital. There may not be a one-size-fits-all solution. This means that the discussion should center on principles rather than absolutes. In addition to considering hours worked, there should be consideration given to the intensity of coverage. For instance, ACS at a center with high volume urban trauma and/or one that provides quaternary care for complex emergency general surgery (EGS) is likely different from suburban trauma centers that experience lower admission rates and mostly low acuity blunt trauma.

For academia, it is important to consider how clinical work can be accommodated with administrative, research, and educational responsibilities of the surgeons. Given concerns around achieving the necessary level of accomplishments for academic promotion, these missions further compete with limited time. Institutional leaders and leaders of ACS will need to analyze how clinical and non-clinical responsibilities are measured and managed.

The final consideration is the differential impact of an ACS specialty on practice for women and historically underrepresented groups in surgery. For example, McClelland and Gardner reported the three major barriers facing black academic physician faculty are: (1) Disparities in National Institutes of Health (NIH) grant funding, (2) Absence of mentorship, and (3) Increased activities not resulting in promotion (commonly known as the 'minority tax').[26] In an era where ACS needs a workforce, maintaining a specialty that can attract all genders and races is important.[27] Continual consideration must be given to how to develop and support a diverse workforce and to mitigating disparities that might limit an individual's ability to be successful as an ACS surgeon.

SUMMARY

Defining full time equivalence in ACS is challenging.[28] It is important that ACS as a specialty engages in a national dialogue around defining its scope of practice, refining training curricula, and exploring how to create a stable workforce. These considerations need to be broad and acknowledge the diverse hospital types and sizes that employ acute care surgeons, as well as the diversity among acute care surgeons themselves. Ensuring adequate staffing models and improving the quality of life of acute care surgeons only serves to strengthen the specialty and improve the quality of care provided to patients who need these services.

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